

Burundi Cancer Care Needs: A Call to Action

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ABSTRACT

Burundi is a landlocked country in the East Central Africa region. Beyond a long civil war strife, cancer care remains overlooked, in terms of both infrastructure and human resources needs, and it shows from estimated global incidence and

mortality figures. Through a focused literature search, this study highlights the main cancer care needs in this country, with the aim to gather global oncology support to Burundi. *The Oncologist* 2020;25:1055–1059

Implications for Practice: There is little knowledge about the state of oncology in Burundi. This article, based on a literature search, depicts an image of the current state of cancer care in Burundi and aims to compel global health enthusiasts to join in curbing the death toll of cancers in Burundi.

INTRODUCTION

Country Profile

Burundi is a small, landlocked country in East Africa (Fig. 1). Before its independence in 1962, the country was first a kingdom for more than 3 centuries and then later placed under German and Belgian colonial authorities from 1896 to 1962. Political instability from the independence era, culminating in the civil war that started in 1993 and spanned more than 12 years, made the health sector overlooked for many decades, focusing mainly on common communicable diseases. As of 2019, the country's population was 11 million, as per the World Bank figures. The country counts three medical schools, one in the main, national university (University of Burundi) and two private medical schools across the country.

Health System

According to the World Bank 2017 data, Burundi is classified among low-income countries with a per-capita gross domestic product of a little over \$285 [1]. Burundi has one of the highest population densities on the African continent, with 410 people per square kilometer, with more than 90% of the population living in rural areas [1, 2]. Despite different concerns, the country has seen an increase in life expectancy from 58 to 62 years in 2016 [2].

One of the challenges facing the health care system is the lack of physicians; the current key indicators show that

there are approximately three doctors per 100,000 people [3]. The health care and patient referral systems are organized from community health centers up to the national referral centers with 48 government hospitals, with 43 district and 5 national (referral) hospitals and numerous nonintegrated private health facilities [4].

Cancer remains the leading cause of mortality in the world, with a higher predilection for low- and middle-income countries [5]. Lack of the basic required infrastructures to treat cancers adds to the general dearth of specialized practitioners for a multidisciplinary approach to cancer care [6, 7].

Cancer literature related to Burundi is scarce and only limited, over time, to human immunodeficiency virus (HIV) and other viral-associated malignancies [8–10]. The national cancer figures are drawn from the GLOBOCAN estimates, highlighting the existing hindrance created by the lack of reliable cancer registries in the country [5, 11, 12].

According to the Joint United Nations Program on HIV/AIDS report on HIV/AIDS prevalence in Burundi, in 2016, “Burundi had 2,200 (<1,000–6,000) new HIV infections and 2,900 (1,800–4,200) AIDS-related deaths. There were 84,000 (65,000–110,000) people living with HIV in 2016, among whom 61% (47%–82%) were accessing antiretroviral therapy. Among pregnant women living with HIV, 84% (59% to >95%) were accessing treatment or prophylaxis to

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Table 1. Summary and comparison of incidence of mortality of the top five malignancies encountered in both genders

| Malignancy | Males (2012) | | Malignancy | Females (2012) | |
|---------------------|--------------|-----------|-------------|----------------|-----------|
| | Incidence | Mortality | | Incidence | Mortality |
| Prostate | 7.4 | 6.5 | Cervix | 15.8 | 12 |
| Esophagus | 4.03 | 3.7 | Breast | 7.7 | 4.4 |
| Kaposi sarcoma | 2.4 | 1.7 | Esophagus | 2.3 | 2.1 |
| Liver | 1.6 | 1.6 | Colo-rectal | 1.8 | 1.5 |
| Lip and oral cavity | 1.4 | 1.2 | Ovary | 1.3 | 1.08 |

| | Males (2018) | | | Females (2018) | |
|----------------|--------------|-----------|----------------|----------------|-----------|
| | Incidence | Mortality | | Incidence | Mortality |
| Prostate | 8.3 | 5.07 | Cervix | 20.6 | 16.9 |
| Kaposi sarcoma | 6.01 | 3.3 | Breast | 7.04 | 4.03 |
| Esophagus | 3.9 | 2.03 | Kaposi sarcoma | 3.3 | 2 |
| Liver | 3 | 1.6 | Colorectal | 2.5 | 0.9 |
| Colorectal | 2.1 | 0.8 | Esophagus | 1.7 | 1.4 |

Data are expressed per 100,000 population.

Source: GLOBOCAN 2012 and GLOBOCAN 2018 (IARC).

prevent transmission of HIV to their children. An estimated <500 (<200 to 1,300) children were newly infected with HIV due to mother-to-child transmission. Among people living with HIV, approximately 53% (41%–71%) had suppressed viral loads. Since 2010, new HIV infections have decreased by 54% and AIDS-related deaths have decreased by 49%.”

There are no data on the prevalence of cancers related to HIV; however, the high prevalence of HIV/AIDS among the general population is an alert of the possibility of having a high number of cancers related to HIV.

This review of literature aims at mapping out the current needs of the cancer care system in Burundi, by gathering existing local and international documentation on the country related to cancer care.

MATERIALS AND METHODS

In June 2019, we conducted a literature review, using the World Bank, GLOBOCAN, documentation by the Burundi Ministry of Health and World Health Organization reports and facts sheets on the country.

Data related to the cancer disease burden, state of cancer registry, prevention, screening, diagnosis, and management were drawn and reported.

Findings

Universal Health Coverage

The national community health insurance scheme started more than 3 decades ago but waned off during the years of civil war, between 1993 and 2005. Following the national policy for health sector reframing in 2006, major shifts occurred in the year 2012 with the reintroduction of the Carte d'Assurance Maladie, thereby establishing free health care for the majority of public health institutions, but older reports show a historical low national coverage over the years, and as of 2015, the universal health coverage index was 43%. According to 2014 reports, both external and government

funding contributed nearly 4 billion BIF (approximately \$2.6 million USD) annually to the universal health coverage [13–16]. Public institution health coverage exists with dual financing from employees and government. Private insurance companies are functional but with a lower rate of subscription.

Disease Burden

At the time of the GLOBOCAN report, the available country data were based on reports from neighboring countries and subsequent national estimates; owing to the absence of a national registry, we made a comparison between the GLOBOCAN 2012 and the newer GLOBOCAN 2018 reports.

From the GLOBOCAN 2012 estimates, the overall incidence of cancer was 6,743 new patients, excluding nonmelanoma skin cancer, suggesting a larger figure of incidence. Cervical cancer occupies the highest rank in the general cancer incidence, and prostate cancer has the highest figures in males in terms of incidence and mortality, followed by esophageal cancer in males.

A higher incidence was noted in 2018, leaping to an estimated total of 8,682 new patients. Cervical cancer represents a fifth of the cases, and prostate cancer remains the first in incidence for cancers among Burundian males. Interestingly, the risks of developing and dying from cancer before the age of 75 years for both genders are the second highest when compared with neighboring countries.

Table 1 compares the estimated incidence and mortality for the first five malignancies encountered in both genders between 2012 and 2018.

Prevention

According to a Global Alliance for Vaccine and Immunization (GAVI) report dating from 2013, there was no implementation or human papillomavirus (HPV) vaccine pilot previously done in Burundi. The targeted population (2013) was of 21,812 young girls starting from age 10, using the



Figure 1. Burundi map (Nations Online Project).

bivalent HPV vaccine (Cervarix, Human Papillomavirus Bivalent [Types 16 and 18] Vaccine, GlaxoSmithKline) [17]. The HPV center fact sheet of 2017 suggests, however, that a vaccination program pilot did exist [18].

Reports are confirming the introduction of hepatitis B vaccine for newborns date over 3 decades [19]. However, no current data are available indicating its use for health care professionals and active hepatitis carriers.

Relatively new knowledge exists related to hepatitis C in Burundi, hinting at high prevalence in individuals aged above 55 years [10]. The national prevalence is approximately 8.4% [20].

From a World Health Organization (WHO) report on the global tobacco epidemic in 2017, adult (aged 15–59 years) tobacco use was 19.3% [21]. There were no reported laws

banning use in public spaces or health warnings on cigarette packages. However, according to the same report, the country has signed and ratified the WHO framework convention on tobacco control, and specific national objectives in tobacco control exist.

There are no written policies for alcohol consumption control. The country's figures varied between 1996 and 2010 from a total of 1.17 to a total of 9.3 L of pure alcohol per capita [22].

Screening

A national cancer control program exists in the country, running since the years 2016–2020. According to a recent publication, less than 10% of health care professionals have adequate knowledge on cervical cancer screening, whereas

Table 2. Summary of the data related to diagnosis capacity in Burundi

| Service area | Personnel | Available equipment | Caveats |
|--------------|--|--|--|
| Pathology | Two current pathologists ^a at the pathology laboratory at the University Teaching Hospital (Bujumbura) | Fine-needle aspiration done. Smears are done. | Microtome broken since 2016. No pathology results done; immunohistochemistry and molecular tests cannot be performed. |
| Radiology | Formal bachelor's degree training of radiology technicians at the National Institute of Public Health. Four radiologists at the University Teaching Hospital | Conventional x-rays spread throughout the country; computed tomography scans in three rural centers in the country | No magnetic resonance imaging, and no nuclear capacity (personnel and equipment) available. Computed tomography scans available in centers without radiologists. No PACS linking the facilities. |

Abbreviation: PACS, picture archiving and communication system.

^aOne of the authors is a pathologist at the pathology laboratory of the University Teaching Hospital in Bujumbura.

considerably lower rates know appropriately management-related decisions [23]. The HPV center reported in 2016 that there is no available cervical cancer screening program [17]. In the same year, Pathfinder International invested in training physicians into screening practices and provided cryotherapy equipment to two district hospitals of Northern Burundi (Kayanza and Muyinga) [24]. With a little over 1 million people served between the two provinces of Kayanza and Muyinga, a larger percentage of the population in other parts of the country remains without a cervical screening program. A nongovernmental organization-based center has been developed in the capital city of Bujumbura under the expertise of the gynecology and pathology services of The University Teaching Hospital of Kamenge, the only existing in the country. The center provides management of noninvasive cervical cancer with cryotherapy. Pap smear testing is available at the pathology laboratory of University Teaching Hospital of Kamenge and not readily present at the primary health care centers [25].

Breast cancer screening by self examination or health professional examination has been undertaken through campaign initiatives. With no recorded infrastructures and personnel related to mammography, no duly written policies in breast cancer screening exist.

Colorectal cancer and prostate cancer face similar situations, with no screening policies existing in the country. The figures related to these malignancies are based solely on the GLOBOCAN estimates.

Diagnosis

The data related to diagnosis capacity in Burundi are summarized in Table 2. They have been summarized in the pathology and radiology services, as adjunct to general cancer care.

Management

To date, there are no comprehensive cancer centers in Burundi. The WHO reports that the country does not have palliative, medical, pediatric, or radiation oncology capacities, in terms of personnel or infrastructure [15]. A larger gap is found with cancer specialized care, which has been reported elsewhere.

It is, however, worth noting that the short-term (2015–2020) national cancer control program does not address the shortage and training of staff because no medical postgraduate system or investment in the education of staff overseas exists [26].

On the other side, infrastructure going hand in hand with a specialized oncology care team is lacking over the entire country of Burundi. The health system relies on medical transfer abroad for patients suspected with cancers, leaving a larger portion of the population needing cancer care unattended to. Patients with cancer are at the moment self-referring to regional neighboring countries (mainly Rwanda and Kenya and some to South Africa, India, and Europe).

The existing cancer care is limited to a few surgical procedures (hysterectomy and mastectomy) performed by general surgeons, spread across the country. This, however, is blocked by the nonexistent pathology capacities. Patients needing adjuvant therapy are referred abroad for care, on a private basis [27].

DISCUSSION

The general cancer situation in Burundi is no different than the majority of low-income countries (LICs) [7]. Interesting developments have been recorded in the last decade in the East African region, regarding building of cancer care capacities, which could be scalable to other nations [28, 29].

Successful international and private–public partnerships for general cancer awareness, prevention, and management on national levels have been reported elsewhere [28, 30]. Our findings show in a concise way areas needing cooperation and global oncology action in order to address them. A few upcoming initiatives have been in place, with the Kigutu Village Health Works set to help patients with cancer in the long term.

Strengthening national cancer action plans have been undertaken across the globe and have contributed largely to a shift in cancer care efforts [28–32]. Although screening methods in LICs that can be used at any point of care rely heavily on traditional but evidence-based procedures (example of cervical cancer), the scarcity of these methods, as found in our review, poses a threat to effective cancer care in Burundi. Accessing information related to screening and remotely making decisions about the next steps in management have been tested and approved in similar settings and could palliate the lack of the screening infrastructures.

Other disease screening methods would need much national public decision makers' implication together with global cooperation in availing the adequate infrastructures.

The diagnosis and management components depend much on adequate and specialized staffing. As there are no

teaching programs in the country, a few medical postgraduate schools exist in the East African region and could help in providing trained health care professionals. Where cancer treatment has been initiated recently, similar staffing challenges were successfully addressed by using a nononcologist model of providing care.

CONCLUSION

Similar to many other countries in the Sub-Saharan African region, cancer is a growing public health threat in Burundi. However, large deficits exist in the cancer care system in the country, owing to the lack of an adequate national program of cancer care. There is a need for global partnerships in order to face the different problems posed by cancer in Burundi.

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DISCLOSURES

The authors indicated no financial relationships.